Claims

What is claimed is:

1. An array of chemically reactive sites, comprising:

a substrate; and

a plurality of three-dimensional microstructures formed on the substrate, each three-dimensional microstructure being made with polymer material and having a plurality of reactive sites formed on a surface of the three-dimensional microstructure.

2. The array of claim 1, wherein the three-dimensional microstructure increases surface area and density of the reactive sites on the surface of the three-dimensional microstructure.

3. The array of claim 1, wherein one type of polymer material is polymer gel.

4. The array of claim 1, wherein the polymer material is porous on a portion of the surface of the three-dimensional microstructure.

5. The array of claim 1, further including a plurality of chemical groups respectively attached to ones of the reactive sites on the surface of the three-dimensional microstructure, each chemical group including at least one monomer.

6. The array of claim 5, wherein a first one of the plurality of chemical groups has a first chemical structure and a second one of the plurality of chemical groups has a second chemical structure.

7. The array of claim 1, wherein a microchannel is formed around at least one of the plurality of three-dimensional microstructures.

8. An array of chemically reactive sites, comprising:

a substrate; and

a plurality of microstructures formed on the substrate, each microstructure being made with porous polymer material and having a plurality of reactive sites formed on a surface of the microstructure.

9. The array of claim 8, wherein the plurality of microstructures are three-dimensional in form.

10. The array of claim 8, wherein the porous polymer material increases surface area of the microstructure and density for the reactive sites on the surface of the microstructure.

11. The array of claim 8, wherein one type of porous polymer material is porous polymer gel.

12. The array of claim 8, further including a plurality of chemical groups respectively attached to ones of the reactive sites on the surface of the microstructure, each chemical group including at least one monomer.

13. The array of claim 12, wherein a first one of the plurality of chemical groups has a first chemical structure and a second one of the plurality of chemical groups has a second chemical structure.

14. A method of making an array of chemically reactive sites, comprising:

providing a substrate; and

disposing a plurality of three-dimensional microstructures on the substrate, each three-dimensional microstructure being made with polymer material and having plurality of reactive sites formed on a surface of the three-dimensional microstructure.

15. The method of claim 14, wherein the three-dimensional microstructure increases surface area and density of the plurality of reactive sites on the surface of the three-dimensional microstructure.

16. The method of claim 14, wherein one type of polymer material is polymer gel.

17. The method of claim 14, wherein the polymer material is porous on a portion of the surface of the three-dimensional microstructure.

18. The method of claim 14, further including attaching a plurality of chemical groups to ones of the reactive sites on the surface of the three-dimensional microstructure, each chemical group including at least one monomer.

19. The method of claim 18, further including:

forming a first one of the plurality of chemical groups with a first chemical structure; and

forming a second one of the plurality of chemical groups with a second chemical structure.

20. The method of claim 14, further including forming a

microchannel around at least one of the plurality of three-dimensional microstructures.

21. In an array of chemically reactive sites, a plurality of polymer microstructures formed on a surface of the array, each microstructure comprising:

a plurality of reactive sites disposed on a plurality of surfaces of each polymer microstructure, each reactive site having a reactant molecule with at least one monomer.

22. The array of claim 21, wherein the plurality of polymer microstructures are three-dimensional in form.

23. The array of claim 22, wherein the three-dimensional form of the polymer microstructure increases surface area and density of the reactive sites on the plurality of surfaces of each polymer microstructure.

24. The array of claim 21, wherein ones of the plurality of polymer microstructures are made with polymer gel.

25. The array of claim 24, wherein a portion of the surface of the polymer microstructure is porous.

26. The array of claim 21, further including a plurality of chemical groups respectively attached to ones of the reactive sites on the plurality of surfaces of each polymer microstructure, each chemical group including at least one monomer.

27. The array of claim 26, wherein a first one of the plurality of chemical groups has a first chemical structure and a second one of the plurality of chemical groups has a

second chemical structure.

28. The array of claim 21, wherein a microchannel is formed around at least one of the plurality of polymer microstructures.

29. An array of chemically reactive sites, comprising:

a substrate; and

a plurality of three-dimensional microstructures formed on the substrate, each three-dimensional microstructure being made with a material and having a plurality of reactive sites formed on a surface of the three-dimensional microstructure.